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NEW ANTIFUNGAL MEDICATION IMPACT ON MARKET SHARE AND UTILIZATION OF TRADITIONAL AGENTS IN A SINGLE HEALTH CARE SYSTEM

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OBJECTIVES: The emergence of more resistant fungal pathogens necessitated development of new antifungal agents. Three new antifungal medications (caspofungin, anidulafungin, voriconazole) entered the health care market from 2001–2006. The objective of this study is to describe the impact of these new agents on drug utilization and charges in a single health care system. **METHODS:** Retrospective descriptive analyses were conducted to describe trends in utilization of and charges associated with antifungal medications in a 7-hospital health-system from 2005–2007. Data was obtained from the hospital accounting/inventory management systems. The new antifungal agents were compared to traditional ones (amphotericin B, fluconazole, itraconazole). The proportion of total charge and total doses of each antifungal were calculated as proxies of market share and utilization, respectively. Charge data were converted to $2007 using the medical component of the CPI. **RESULTS:** Total doses dispensed were 51,845 to 12,471 patients. Utilization of new antifungal agents was 29%, 22% and 29% of antifungal medications in 2005, 2006 and 2007. These newer drugs, however, comprised 71%, 55% and 61% of total antifungal charges in these years. Amphotericin B/liposomal amphotericin B increased utilization by 79% (2.5–4.3%) and increased market share 200% (8–22%) despite a reduction in mean charge/dose ($632 in 2005 and $610 in 2007). Fluconazole IV use dropped from 18% to 9% with corresponding reduction in percent total charges from 10% to 7% (mean charge/dose $111 in 2005, $98 in 2007). Oral fluconazole had the largest utilization of all antifungals (50–56%). Its market share remained fairly constant (10%, 12%, 9% 2005–2007) with decreased mean charge/dose from $37 to $18. Itraconazole, oral and IV, accounted for very little market share and utilization. **CONCLUSIONS:** Use of cost containing strategies and formulary management in real world practice have restricted growth of market share and utilization of new antifungal agents and encouraged use of traditional medications.

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DRUG UTILIZATION REVIEW OF ANTIMICROBIAL DRUGS IN AN OUTPATIENT PRIVATE PEDIATRIC SETTING

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OBJECTIVES: This study was carried out to assess the drug utilization pattern in a private pediatric outpatient setting with special reference to use of antimicrobial drugs using the WHO recommended prescription and complimentary indicators. **METHODS:** The data were collected prospectively from 301 prescriptions. Prescriptions were analyzed for WHO recommended prescription and complimentary indicators. The results were represented as average ± SEM or percentage. **RESULTS:** The male patients contributed 60% to the sample. The maximum number of patients were between one to five years. The average number of drugs per encounter was 2.80 ± 0.06 (range 1–5). Only one prescription had an injection prescribed in it. Less than 1% drugs were prescribed by generic name. Compliance to WHO Model List of Essential Medicines and National List of Essential Medicines was to the tune of 7.7% and 10.2%, respectively. Twenty percent of total encounters had an antimicrobial drug. None of the patients were prescribed with more than one antimicrobial drug. The average duration of prescribed antimicrobial drug was 4.07 ± 0.15 days. Respiratory tract infection was the most common disease followed by asthma and acute gastroenterotitis. Oral administration was the most frequent method of administration (84.2%), followed by inhalers (7%). A majority of drugs prescribed were in the form of syrup (57.3%). Average cost of drugs per prescription was Rs.142.68 ± 2.31. Only 10.8% and 0.16% of total cost was spent on antimicrobial drugs and on an injection respectively. **CONCLUSIONS:** The average number of drugs per prescription was within acceptable limits. Further, low use of antimicrobial drugs and injections reflect the rational use of drugs in this setting. These results have provided preliminary insight into prescribing practices in private outpatient pediatric setting.

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HOSPITAL LENGTH OF STAY AND COSTS ASSOCIATED WITH INAPPROPRIATE TREATMENT OF CANDIDEMIA IN THE ICU

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OBJECTIVES: Candida sp. are a growing cause of nosocomial blood stream infections (CBSI). Representing over 1/10th of all BSIs and causing high mortality, CBSI are of particular concern in the ICU. Such modifiable risk factors (MRF) as the failure to remove central venous catheter (CVC), delayed administration and inappropriate dosage of antifungals confer elevated mortality risk. We hypothesized that these MRFs are associated with increased hospital length of stay (HLOS) and costs among ICU patients with proven CBSI. **METHODS:** We conducted a single-center retrospective cohort study between 2004 and 2006 enrolling consecutive hospitalized patients with culture-confirmed CBSI within 14 days of hospital admission and > 1 dose of antifungal treatment. Appropriate therapy was defined as timely administration (within 24 hours of suspicion of CBSI) of an adequately dosed antifungal agent to which the isolated pathogen was sensitive in vitro. HLOS was primary and hospital costs were secondary outcomes. **RESULTS:** Of 90 ICU patients identified (mortality 23%), 78 (87%) had a CVC of which 14 (18%) were not removed. Antifungal treatment was delayed 24 hours in 76 (85%), 48 hours in 44 (49%) and dosed inappropriately in 21 (23%) patients. Unadjusted HLOS and costs increased with increasing delay in treatment administration (no delay: 12.8+9.9 days, $32,748+$22,292; 24 hours: 24.7+17.8 days, $62,481+$42,814; 48 hours: 27.7+18.7 days, $70,748+49279); inadequate dosing of fluconazole showed similar differences (26.6+17.9 vs. 21.7+17.1 days, p = 0.262; $68,106+$52,053 vs. $54,736+$37,831, p = 0.199). Similar trends were observed in the cohort of ICU survivors only. **CONCLUSIONS:** Both delay in and inappropriate dosing of antifungal therapy are associated with increased hospital resource utilization among ICU patients with CBSI. If confirmed in further analyses and studies, these MRFs may provide attractive targets for interventions designed to improve both clinical and economic outcomes of CBSI in the ICU. Funded by a research grant from Astellas Pharma US Inc.

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HEALTH CARE UTILIZATION OF ANTIBIOTICS WITHIN THE SLOVAK REPUBLIC

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OBJECTIVES: The aim of this study was to collect comparable and reliable data on the antibiotic therapy in Slovakia during the period 1998 – 2007. Special interest was paid to the trend of antibiotic usages and the relationship between antibiotic use and resistance was also studied. **METHODS:** Data of wholesalers (following ATC/DDD), who are legally obliged provide this information to the Slovak Institute for Drug Control, was used for the analysis. **RESULTS:** The collected data showed a significant increase in antibiotic consumption from 1998 to 2007 in terms of defined daily doses per 1000 inhabitants per day (DID) – in 1998 (29.733), in 2003 (30.705) and in 2007 (34.364). We can see a noticeable increase in consumption of macrolides (DID); in 1998 (2.976), in 2003 (3.693) and in 2007 (6.144) and a moderate increase in fluoroquinolones consumption – in 1998 (1.009), in 2003 (1.602) and in 2007 (2.339). A significant decrease in first-generation cephalosporins consumption – in 1998 (1.052), in 2003 (0.662) and in 2007 (0.370), and a noticeable increase in consumption of second-generation cephalosporins – in 1998 (1.200), in 2003 (1.658) and in 2007 (3.261) and third-generation cephalosporins in 1998 (0.015), in 2003 (0.118) and in 2007 (0.606) can be seen from this analysis. The results show that consumption of combinations of penicillins including beta-lactamase has increased – in 1998 (2.977), in 2003 (4.645) and in 2007 (5.778), but consumption of beta-lactamase sensitive penicillins has decreased – in 1998 (4.171), in 2003 (3.409) and in 2007 (2.343) in term of DID. From this study, the stable antibiotics consumption in financial term – in 1998 (€49,141,000), in 2003 (€59,078,000) and in 2007 (€54,680,000) can be seen. **CONCLUSIONS:** Adherence to principles of antibiotic policy lead to fundamental short and long term financial savings within health care systems.

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INCREASING CHC TREATMENT RATE IN US IS A COST-SAVING STRATEGY

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OBJECTIVES: The low treatment rate in chronic hepatitis C (CHC) is partially due to suboptimal SVR achieved with the current pegylated-interferon/ribavirin (P/R) therapy. Here we applied a compartment model to assess the potential impacts of a higher CHC treatment rates in the US. **METHODS:** This mathematical model was expressed by partial differential equations across population compartments based on injection-drug-use status, CHC status (infection, diagnosis, genotypes, treatment, and SVR), and disease-progression status. Model inputs were based on published sources. Model was calibrated from 2002–2006 and matched closely with CDC reports and other published literature. The model was applied to assess impacts of a higher CHC treatment rate from 2007–2040. Key assumptions included: only the current P/R treatment is available during 2007–2040; P/R durations consistent with current treatment guidelines by genotypes and costs $28,000/48-week. All costs were converted into 2007 dollars using 3% discount rate. **RESULTS:** When P/R treatment rate increased from the current 6% to 30% across all patient groups between 2007–2040, a total of 431,000 more patients could be treated, leading to 236,716 more patients being cured, and resulting in 111,802 fewer CHC incidences, 110,543 fewer ALD incidences, and 160,679 fewer deaths. Cost increases with higher treatment rate strategy come from more treatments (+$12.4 billion) and managing more P/R treatment failure patients (+$9.4 billion). Cost savings mainly come from having fewer diagnosed but not treated CHC patients to manage (-$20.5 billion) and having fewer patients with advanced liver disease (ALD) to manage (-$6.1 billion). Overall direct medical cost savings are projected at $4.8 billion compared to the base scenario of 6% treatment rate. **CONCLUSIONS:** Increasing P/R treatment rate could result in more patients being cured earlier, preventing CHC and ALD incidences and saving lives. Our model projects increasing treatment rates could be a cost saving strategy.